WASHINGTON LOGGING EQUIPMENT LTD.

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WASHINGTON MODEL 78SL

RUNNING SKYLINE, OR SLACKING SKYLINE MOBILE YARDER

Washington Logging Equipment Model 78-40's and 78A's have been the industry standard for mobile swing yarders operating running skyline systems. Good logging practice dictates most efficient logging is accomplished at distances less than 1,000 feet. Actual practice requires longer distances to handle the layout in some cases - - - and WLE has developed the Model 78SL to operate as a running skyline, or as a slackline system for the longer distance. The skyline drum (or rear main for running skyline applications) can be converted easily in the field by adding or removing lagging as needed for the type of yarding to be done.

The 78SL maintains the swing capability permitting the logs to be decked on small landings. The swing capability eases the movement of the log through narrow roads when selective logging. The yarder can be swung to lead when changing roads, thus minimizing set up time. Two of the guylines are "walking type" so the yarder can be moved down the road, relocating only one guyline while leaving the other in place.

The 78SL maintains the wide drum design which keeps speed and pulls as close to equal at the head tree and tail tree as possible. Fewer wraps also means less pressure and damage on the bottom layers of line. The drum performance data are indicated on page 2.

RUNNING SKYLINE (PULLS AT 85% EFFICIENCY)

Drum	Dimensions	Capacity	Line Pull Lbs.		Maximum Line Speeds FPM	
Front Main	Flange - 38" Drum - 30" Drum Length - 30"	1760' - 3/4" 2080' - 5/8"	Empty Full	37000 31000	Empty Full	2040 2430
Rear Main	Flange - 40" Drum - 30" Drum Length - 30"	1760' - 3/4" 2080' - 5/8"	Empty Full	47500 39800	Empty Full	2040 2430
Haulback	Flange - 37" Drum - 28" Drum Length - 33"	2250' - 3/4" 3130' - 5/8" 4000' - 9/16"	Empty Full	21400 19000	Empty Full	2470 2800
Straw Drum (3rd Gear)	Flange - 34" Drum - 10" Drum Length - 7½"	5300' - 5/16"	Empty Full	13850 4270	Empty Full	1690 5490
Guyline Drum	Flange - 14" Drum - 9" Drum Length - 13"	270' - 3/4"	Empty Full	4000 3060	Empty Full	125 164

SLACKING SKYLINE (PULLS AT 85% EFFICIENCY)

Drum	Dimensions	Capacity	Line Pull Lbs.		Maximum Line Speeds FPM	
Front Main	Flange - 38" Drum - 30" Drum Length - 30"	1760' - 3/4" 2080' - 5/8"	Empty Full	37000 31000	Empty Full	2040 2430
Skyline	Flange - 40" Drum - 14" Drum Length - 24"	2200' - 1" 1740' - 1-1/8"	Empty Full	97600 37500	Empty Full	990 2580
Haulback	Flange - 37" Drum - 28" Drum Length - 33"	2250' - 3/4" 3130' - 5/8" 4000' - 9/16"	Empty Full	21400 19000	Empty Full	2470 2800
Straw Drum (3rd Gear)	Flange - 34" Drum - 10" Drum Length - 7½"	5300' - 5/16"	Empty Full	13850 4270	Empty Full	1690 5490
Guyline Drum	Flange - 14" Drum - 9" Drum Length - 13"	270' - 3/4"	Empty Full	4000 3060	Empty Full	125 164
Optional						
Slackpuller Drum	Flange - 24" Drum - 16" Drum Length - 24"	2000' - ½"	Empty Full	5200 3600	Empty Full	2060 3000

The Washington Model 78SL is produced with the following equipment components:

Power Plant

The power plant is composed of a General Motors diesel engine Model 6V71 rated 238 horsepower at 2100 RPM. It is equipped with a Twin Disc 44-1131 transmission with four speeds forward and four speeds reverse. The single stage converter is a Twin Disc 8FLW1452. The hydraulic pumps for the guylines and hydraulic cylinders are located at and drive off the converter drive ring.

Intermediate Shaft Assembly

The intermediate shaft assembly includes the strawdrum unit which will be described separately. The chain drive from the power plant drives a sprocket which is keyed to the intermediate shaft. Also mounted on the intermediate shaft are the main drum pinion and two haulback drum pinions. The shaft assembly is supported by self-aligning bearings and mounted in bearing carriers on each side of the hoist frame.

Drums

The front main, rear main (skyline), haulback, and strawline drums are equipped with air actuated clutches and air set brakes with spring set, air released parking. The front main drum can be rotated in the opposite direction from the rear main drum to pull slack for a drop line carriage or to operate a grapple. The rear main drum can be used for a slacking skyline (see line capacities), or can be lagged up for use as a running skyline. The haulback drum is interlocked to the main drum by means of clutches and a two speed gear drive. All components of the interlock are mechanical.

A. Haulback Drum assembly consists of the drum, brake flange with band type brake, and two bull gears with air actuated caliper style clutches. One clutch is engaged for skidding and the other for haulback.

B. Rear Main (Skyline) Drum assembly consists of drum, brake flange with band type brake, bull gear with Twin Disc air actuated plate type clutch, and fixed drive sprocket for driving front drum in opposite direction. The bull gear drives the rear main through the plate clutch and also drives the front main drum. Lagging is furnished; it is installed for running skyline applications to equalize line speeds, and removed for additional line capacity for slacking skyline applications.

C. Front Main Drum assembly consists of drum, brake flange with band type brake, bull gear with a cone type clutch, and driven sprocket with Twin Disc air actuated plate type clutch for driving front drum in opposite direction.

D. Strawdrum is mounted on the intermediate drive shaft on ball bearings for ease of pulling slack. The drum is equipped with an air actuated plate type clutch and a caliper brake.

E. Three Guy Drums are standard. Each drum is powered by an independent hydraulic motor and chain drive. They are powered either direction for maximum control. The guydrums are held in place by spring set, air released dogs. Two guydrums are the walking type for ease of yarding along a road. The guydrums are controlled from the operator's cab.

F. The Slackpuller Drum is offered as an option. It is driven from the rear main bull gear. It is equipped with an internal expanding clutch and a caliper type disc brake.

Swing Unit Assembly

The swing unit assembly is powered by a Vickers vane-type hydraulic motor. The gears and pinions of the drive are housed in a fabricated steel case and run in oil. The final drive shaft is splined on both ends for easy assembly or disassembly. The complete assembly can be removed by unfastening three bolts and disconnecting the hydraulic and air hoses.

Upper Travel Gear Box

The travel box is bolted to the machinery platform and located under the main drums. The gear box is driven by a drive shaft from the transmission; the horizontal output shaft of the gear box chain drives the intermediate drive shaft. The gear box drives through a right angle bevel gear set to the vertical drive shaft. The gears and bearings run in a bath of oil. The vertical drive shaft is bored the full length to accept the Washington air tube which carries oil and air to the controls on the carrier for such items as brakes, steering, etc.

Lower Gear Box

The lower gear box consists of a right angle bevel gear set running in oil for lubrication. The output shaft includes a companion flange for connecting to a short driveline to the carrier transmission.

Crawler Type Carrier

The crawler carrier is the same as used for the Model 78A and 118 Skylok yarders. The main frame is designed and fabricated by Washington, and individual components are purchased and installed in our plant. The 11'2" track width ensures stability and ease of maneuvering. The drive line assembly drives direct from the lower bevel gear box to the carrier transmission. The brakes are attached to the differential drive and are air controlled through variable air pressure controls located in the operator's cab. Each track consists of six road wheels to provide bearing area on the ground for good distribution of weight, better maneuverability, and better traction. The track pads can be supplied with grousers, or rubber pads, providing it is specified at the time of the original order. This type of carrier will allow traveling over ground that is not stable enough for rubber tires. Travel speed is approximately six miles per hour. The turning radius measured from the outside track is 37 feet and gradeability is up to 25%.

Boom and "A" Frame

The boom and "A" frame are specifically designed to handle the loads of both the running skyline and slacking skyline systems. The "A" frame is 9 feet higher than previous model 78A's for reduced guyline loading. The boom is equipped with fixed, 1-3/8" pendants, yarding sheaves, and fairleads. The type of sheaves used permit the rigging to roll over them without interference. The boom and "A" frame are raised and lowered by a three stage hydraulic cylinder. The boom and "A" frame can be conveniently lowered without using other equipment; lowering and raising the boom normally requires only 2-5 minutes and is controlled from the operator's cab.

Operator's Cab

The operator's cab is located up front to provide maximum visibility of landing area and turn of logs. The cab is rubber mounted and completely guarded. The cab is equipped with heater, defroster, windshield wiper, horn, opening windows, and rear entry door.

Controls

The controls are conveniently placed for ease of operation. Haulback tension is maintained with a single lever control in a manner similar to the 78A. Clutch, brake, swing, and transmission controls are positioned to give the operator absolute control of the rigging at all times.